

(1) Between mobile earth stations and one or more space stations, or between space stations used by this service; or

(2) Between mobile earth stations, by means of one or more space stations.

This service may also include feeder links necessary for its operation. (RR)

*Non-Voice, Non-Geostationary Mobile-Satellite Service.* A mobile-satellite service reserved for use by non-geostationary satellites in the provision of non-voice communications which may include satellite links between land earth stations at fixed locations.

*1.6/2.4 GHz Mobile-Satellite Service.* A mobile-satellite service that operates in the 1610–1626.5 MHz and 2483.5–2500 MHz frequency bands, or in any portion thereof.

*Passive satellite.* An earth satellite intended to transmit radio communication signals by reflection.

*Protection areas.* The geographic regions on the surface of the Earth where United States Department of Defense (“DoD”) meteorological satellite systems or National Oceanic and Atmospheric Administration (“NOAA”) meteorological satellite systems, or both such systems, are receiving signals from low earth orbiting satellites.

*Radiodetermination-Satellite Service.* A radiocommunication service for the purpose of radiodetermination involving the use of one or more space stations. This service may also include feeder links necessary for its own operation. (RR)

*Satellite Digital Audio Radio Service (“DARS”).* A radiocommunication service in which audio programming is digitally transmitted by one or more space stations directly to fixed, mobile, and/or portable stations, and which may involve complementary repeating terrestrial transmitters, telemetry, tracking and control facilities.

*Satellite system.* A space system using one or more artificial earth satellites.

*Spacecraft.* A man-made vehicle which is intended to go beyond the major portion of the Earth’s atmosphere.

*Space operation service.* A radiocommunication service concerned exclusively with the operation of spacecraft, in particular space tracking, space telemetry and space tele-

command. These functions will normally be provided within the service in which the space station is operating.

*Space radiocommunication.* Any radiocommunication involving the use of one or more space stations or the use of one or more reflecting satellites or other objects in space.

*Space station.* A station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth’s atmosphere.

*Space system.* Any group of cooperating earth stations and/or space stations employing space radiocommunication for specific purposes.

*Space telecommand.* The use of radiocommunication for the transmission of signals to a space station to initiate, modify or terminate function of the equipment on a space object, including the space station.

*Space telemetering.* The use of telemetering for the transmission from a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft.

*Space tracking.* Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination, excluding primary radar, for the purpose of following the movement of the object.

*Terrestrial radiocommunication.* Any radiocommunication other than space radiocommunication or radio astronomy.

*Terrestrial station.* A station effecting terrestrial radiocommunication.

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#### § 25.202 Frequencies, frequency tolerance and emission limitations.

(a)(1) *Frequency bands.* The following frequencies are available for use by the fixed-satellite service. Precise frequencies and bandwidths of emission shall be assigned on a case-by-case basis.

## § 25.202

Space-to-Earth (GHz)	Earth-to-space (GHz)
3.7–4.2 <sup>1</sup>	<sup>1</sup> 5.925–6.425
<sup>1</sup> 10.95–11.2	<sup>4</sup> 13.75–14.0
<sup>2</sup> 11.45–11.7	<sup>5</sup> 14.0–14.2
11.7–12.2 <sup>3</sup>	14.2–14.5
17.7–19.7 <sup>1</sup>	<sup>1</sup> 27.5–29.5
19.7–20.2	29.5–30.0
37.6–38.6	48.2–50.2
40.0–41.0	

<sup>1</sup>This band is shared coequally with terrestrial radiocommunication services.

<sup>2</sup>Use of this band by the fixed-satellite service is limited to international systems, i.e., other than domestic systems.

<sup>3</sup>Use of this band by the fixed-satellite service in Region 2 is limited to national and subregional systems. Fixed-satellite transponders may be used additionally for transmissions in the broadcasting-satellite service.

<sup>4</sup>This band is shared on an equal basis with the Government radiolocation service, grandfathered space stations in the Tracking and Data Relay Satellite System, and until January 1, 2000, spaceborne sensors.

<sup>5</sup>In this band, stations in the radionavigation service shall operate on a secondary basis to the fixed-satellite service.

(2) The following frequencies are available for use by the Radio-determination Satellite Service:

1610–1626.5 MHz: User-to-Satellite Link

2483.5–2500 MHz: Satellite-to-User Link

Fixed-Satellite service frequencies may be used for links between radio-determination satellites and control centers, including the following designated bands, subject to the Rules in this subpart:

5150–5216 MHz: Satellite-to-Control Center Link

6525–6541.5 MHz: Control Center-to-Satellite Link

(3) The following frequencies are available for use by the non-voice, non-geostationary mobile-satellite service:

137–138 MHz: space-to-Earth

148–149.9 MHz: Earth-to-space

149.9–150.05 MHz: Earth-to-space

399.9–400.05 MHz: Earth-to-space

400.15–401 MHz: space-to-Earth

Until January 1, 1997, the allocations in the 149.9–150.05 MHz and 399.9–400.05 MHz bands may be used on a secondary basis only. Since the 399.9–400.05 MHz band is not allocated internationally to the mobile-satellite service, all operations outside the United States will be on a non-interference basis only.

(4) The following frequencies are available for use by the 1.6/2.4 GHz Mobile-Satellite Service:

1610–1626.5 MHz: User-to-Satellite Link

1613.8–1626.5 MHz: Satellite-to-User Link (secondary)

2483.5–2500 MHz: Satellite-to-User Link

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(5) The following frequencies are available for use by the inter-satellite service:

22.55–23.00 GHz

23.00–23.55 GHz

24.45–24.65 GHz

24.65–24.75 GHz

(6) The following spectrum is available for exclusive use by the satellite digital audio radio service:

2320–2345 MHz: space-to-Earth (primary).

(b) Other frequencies and associated bandwidths of emission may be assigned on a case-by-case basis to space systems under this part in conformance with §2.106 of this chapter and the Commission's rules and policies.

(c) Orbital locations assigned to space stations licensed under this part by the commission are subject to change by summary order of the Commission on 30 days notice. An authorization to construct and/or to launch a space station becomes null and void if the construction is not begun or is not completed, or if the space station is not launched and positioned at its assigned orbital location and operations commenced in accordance with the station authorization, by the respective date(s) specified in the authorization. Frequencies and orbital location assignments are subject to the policies set forth in the Report and Order, FCC 83–184, adopted April 27, 1983 in CC Docket No. 81–704 and the Report and Order, adopted July 25, 1985 in CC Docket No. 84–1299 as modified by the Report and Order, adopted January 19, 1996 in IB Docket No. 95–41.

(d) *Frequency tolerance, Earth stations.* The carrier frequency of each earth station transmitter authorized in these services shall be maintained within 0.001 percent of the reference frequency.

(e) *Frequency tolerance, space stations.* The carrier frequency of each space station transmitter authorized in these services shall be maintained within 0.002 percent of the reference frequency.

(f) *Emission limitations.* The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB;

(2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB;

(3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;

(4) In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.

(g) Telemetry, tracking and telecommand functions for U.S. domestic satellites shall be conducted at either or both edges of the allocated band(s). Frequencies, polarization and coding shall be selected to minimize interference into other satellite networks and within their own satellite system.

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#### § 25.203 Choice of sites and frequencies.

(a) Sites and frequencies for earth stations, operating in frequency bands shared with equal rights between terrestrial and space services, shall be selected, to the extent practicable, in areas where the surrounding terrain and existing frequency usage are such as to minimize the possibility of harmful interference between the sharing services.

(b) An applicant for an earth station authorization in a frequency band shared with equal rights with terrestrial microwave services shall compute

the great circle coordination distance contour(s) for the proposed station in accordance with the procedures set forth in §§ 25.251 through 25.253 and the rain scatter coordination distance contour(s) for the proposed station in accordance with the procedures set forth in § 25.254. The applicant shall submit with the application a map or maps drawn to appropriate scale and in a form suitable for reproduction indicating the location of the proposed station and these contours. These maps, together with the pertinent data on which the computation of these contours is based, including all relevant transmitting and/or receiving parameters of the proposed station that might be useful in assessing the likelihood of interference, an appropriately scaled plot of the elevation of the local horizon as a function of azimuth, and the electrical characteristics of the earth station antenna(s), shall be submitted by the applicant in a single exhibit to the application. The coordination distance contour plot(s), horizon elevation plot, and antenna horizon gain plot(s) required by this section may also be submitted in tabular numerical format at 5° azimuthal increments instead of graphical format. At a minimum, this exhibit shall include the information listed in paragraph (c)(2) of this section. An earth station applicant shall also include in the application relevant technical details (both theoretical calculations and/or actual measurements) of any special techniques, such as the use of artificial site shielding, or operating procedures or restrictions at the proposed earth station which are to be employed to reduce the likelihood of interference, or of any particular characteristics of the earth station site which could have an effect on the calculation of the coordination distance.

(c) Prior to the filing of his application, an earth station applicant shall coordinate the proposed frequency usage with existing terrestrial users and with applicants for terrestrial station authorizations with previously filed applications in accordance with the following procedure:

(1) An applicant for an earth station authorization shall perform an interference analysis in accordance with the